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## CLAIMS

1/ A coaxial structure microwave filter constituted by a tube  
5 made of synthetic foam, the tube presenting a constant inner diameter  
and a fully metallized outer surface with, in the axial direction, a profile  
according to a periodic or constant function and an inner bar made of fully  
metallized synthetic foam with a constant outer profile or following a  
10 periodic function, the largest diameter of the bar being noticeably equal to  
the inner diameter of the tube so that the bar be inserted in the tube while  
maintaining the coaxiality between the tube and the bar.

2/ The filter according to claim 1, characterized in that the  
periodic function is a crenelation function, the crenelations having  
15 dimensions identical to or different from one crenelation to another.

3/ The filter according to claim 1 or 2, characterized in that the  
thickness of the tube is chosen to maintain an electrical insulation  
between the metallized surface of the tube and of the bar.

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4/ Process for manufacturing a filter according to a one of  
claims 1 to 3, in which the periodic function is realized by thermoforming  
the foam tube or the foam bar.

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5/ Process of manufacturing according to claim 4, in which the  
foam tube or the foam bar is metallized at the surface by projection or by  
brush.